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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,631	09/29/2004	Arthur I. Watson	68.0417	5630
35204 7590 07/24/2007 SCHLUMBERGER RESERVOIR COMPLETIONS 14910 AIRLINE ROAD ROSHARON, TX 77583			EXAMINER FULLER, ROBERT EDWARD	
			ART UNIT 3672	PAPER NUMBER
			MAIL DATE 07/24/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/711,631	WATSON ET AL.	
	Examiner	Art Unit	
	Robert E. Fuller	3672	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13-20, 22-35, 39, 40, 42-45 and 47-51 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 47-51 is/are allowed.
- 6) ☒ Claim(s) 1-11, 13-20, 22-35, 39, 40 and 42-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. Applicant's after-final amendment, received June 27, 2007, has been entered.

However, based on the discovery of new prior art, examiner has withdrawn the previous prior art rejections and has issued new rejections. Because of this, prosecution on the merits is reopened and this action is non-final.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 16, 17, 19, 22, 23, 25-28, and 30-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Merrill et al. (US 2004/0146415).

With regard to claim 16, Merrill discloses a method of forming a motive unit (10, 14) for a submersible pumping system comprising connecting a motor section shaft (not shown, but inherent) to a protector section shaft (26) to form an axially affixed connection, placing a sealed housing (22) about the axially affixed connection to form a combined motor section and protector section, prefilling the combined motor section and protector section with a lubricating fluid, and forming a protector section head (40)

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having a transverse sand escape hole (52) disposed above a protector section bearing (proximate reference numeral 86).

With regard to claim 17, Merrill teaches moving the combined motor and protector to a well location.

With regard to claim 19, Merrill fails to show the connection of the motor section housing and protector section housing, however the connection is most likely a bolted flange (see the pump section connection in figure 1B), therefore they are threadably connected via threaded bolts.

With regard to claims 22 and 32, Merrill discloses a journal bearing (inner and outer sleeves proximate reference numeral 86) having a replaceable wear sleeve (the inner sleeve proximate reference numeral 86).

With regard to claim 25, Merrill discloses a plurality of oil communication holes (proximate reference numerals 50, 54, and 36 in figures 1A and 1B) deployed at an angle with respect to an axis of the combined motor section and protector section.

With regard to claim 26, Merrill discloses a method for protecting a submersible motor comprising constructing a motive unit (10, 14) having a longitudinal axis for a submersible pumping system with a motor section (14) and a protector section (10) combined; delivering the motive unit to an oil production well as a single unit; and providing the motive unit with a plurality of oil communication holes (see figures 1A and 1B) deployed at an angle of zero with respect to the longitudinal axis such that the angle of the plurality of oil communication holes corresponds with an angle at which the motive unit is positioned relative to vertical during filling of the motive unit with oil.

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With regard to claim 27, the motive unit is prefilled with oil prior to delivery to the well.

With regard to claim 28, Merrill teaches connecting a motor section shaft with a protector section shaft.

With regard to claim 30, Merrill teaches a coupling sleeve (90).

With regard to claim 31, the protector section comprises a protector head (40) having a transverse sand escape hole (52).

4. Claims 39 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Shilman (RU 2162272 C1).

With regard to claim 39, Shilman discloses a system for producing fluid, comprising a motor section (1) having an electrical cable connection (5) having a spring biased terminal block (16). The terminal block is biased towards a sealed position, so that fluid communication is allowed when the plug is inserted, and not allowed when the plug is not inserted (see page 4 of the translation, paragraph 3). Shilman also discloses dielectric gaskets (11, 12, 13).

With regard to claim 40, Shilman discloses a protector section (3) permanently coupled to the motor section.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. Claims 1-5, 7-10, 13, and 15, 23, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill et al. (US 2004/0146415) in view of McAnally (US 5,992,517).

With regard to claims 1, 23, and 33, Merrill discloses a system for producing oil comprising a submersible pump (12) and a motive unit (10, 14) to power the pump, the motive unit being a single device with a motor section (14) and a protector section (10) to seal the motor section from surrounding fluid and to accommodate thermal expansion of lubricating fluid during production of oil, wherein the motive unit comprises a plurality of bearings having bushings (24, 32).

Merrill fails to teach that the bushings are self-lubricating bushings.

McAnally discloses a submersible pump apparatus for producing fluid from a well. McAnally teaches the use of "bearing sleeve[s] of...polymer materials" (column 7, lines 24-25).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the bushings of Merrill to be the self-lubricating polymer type disclosed by McAnally, as McAnally teaches that these types of



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bushings were "corrosion resistant" and useful "for submersible pump applications" (column 7, lines 13-16).

With regard to claim 2, although the connection between the motor section shaft and the motor protector section shaft (26) is not shown, they are inherently connected as the protector section is disposed between the pump and the motor. Therefore, the motor shaft would have to be connected to the motor protector shaft in order to drive the pump shaft.

With regard to claims 3-5, Merrill discloses an interference, or splined-type connection between the motor section shaft and the motor protector section shaft, but fails to disclose a threaded or cross bolt connection.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided a threaded or cross-bolt connection in place of the interference connection disclosed by Merrill, as examiner hereby takes Official Notice of the equivalence of these types of connections for connecting two torque-transmitting shafts together, and further because applicant has provided no criticality for the selection of one type of connection over the other, as evidenced by the fact that applicant has claimed all three types of connections.

With regard to claim 7, the protector section comprises a protector head (40) having a transverse sand escape hole (52).

With regard to claim 8, the protector section further comprises a bearing (36) and a shroud (30) protecting the bearing from sand.

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With regard to claim 9, Merrill discloses a journal bearing (inner and outer sleeves proximate reference numeral 86) having a replaceable wear sleeve (the inner sleeve proximate reference numeral 86).

With regard to claims 10 and 13, Merrill discloses press fitting the wear sleeve to the shaft.

Merrill fails to disclose the replaceable wear sleeve being keyed to the shaft, and the key being spring-loaded.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided a keyed connection to the drive shaft, in order to have ensured that the replaceable wear sleeve would have rotated along with the shaft so that the frictional surface would have always been the interface between inner and outer sleeves, and the shaft itself would not have experienced a frictional load. Furthermore, it would have been considered obvious to have provided spring-loaded keys so that there would have been greater force engaging the wear sleeve with the shaft.

With regard to claim 15, Merrill discloses a plurality of oil communication holes (proximate reference numerals 50, 54, and 36 in figures 1A and 1B) at an angle with respect to an axis.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill et al. in view of McAnally as applied to claim 1 above, and further in view of Shilman (RU 2162272 C1).



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Merrill in view of McAnally discloses an electric submersible motor (14), but fails to disclose the motor comprising a spring biased terminal block.

Shilman discloses an electrical connection having a spring biased terminal block (16). The terminal block is biased towards a sealed position, so that fluid communication is allowed when the plug is inserted, and not allowed when the plug is not inserted (see page 4 of the translation, paragraph 3).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided the motor of Merrill in view of McAnally with the connection module of Shilman, as Shilman's module would have "ensure[d] equalization of pressure in the cavity with that of the liquid within the well. As a result, the cable entry [would not have been] exposed to differential pressure – a factor that [would have ensured] its reliable sealing and long-term serviceability."

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill et al. in view of McAnally as applied to claims 1 and 9 above, and further in view of Jones (US 6,889,420).

Merrill fails to disclose the wear sleeve being coupled to the shaft by a tolerance ring.

Jones discloses a bearing (33) for use in an electric motor comprising a tolerance ring (26).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided a tolerance ring within the press fit connection between the replaceable sleeve and the shaft, in order to have allowed for a

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small degree of movement within the journal bearing and thereby making "the seating of the bearing less critical" (Jones, column 3, lines 12-15) and improving reliability of motive unit.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill et al. in view of McAnally as applied to claim 1 above, and further in view of Howell et al. (US 6,602,059).

Merrill in view of McAnally fails to disclose placing a sensor within the motor section.

Howell discloses a submersible motor and protector assembly having a sensor (30) within the motor (18).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have included a sensor within the motor of Merrill in view of McAnally, as Howell teaches that "one skilled in the art [would have understood] that it can be advantageous to attach an optional sensor to the motor" (column 2, lines 33-36) in order to have enabled an operator at the surface to monitor downhole conditions.

10. Claims 18, 29, 34, 42, 44, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill et al.

With regard to claim 18, Merrill discloses a splined-type connection between the motor section shaft and the motor protector section shaft, but fails to disclose a threaded connection.

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It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided a threaded connection in place of the splined connection disclosed by Merrill, as examiner hereby takes Official Notice of the equivalence of these types of connections for connecting two torque-transmitting shafts together.

With regard to claim 29, Merrill fails to disclose provided a single, unitary shaft.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided a single, unitary shaft instead of the jointed shaft disclosed by Merrill, in order to have provided for a stronger driveshaft and furthermore because it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routine skill in the art. *Howard v. Detroit Stove Works*, 150 U.S. 164 (1893).

With regard to claims 34 and 42, Merrill discloses a motive unit (10, 14) for driving a submersible pump, the motive unit having a journal bearing (inner and outer sleeves proximate reference numeral 86) disposed about a drive shaft (26), wherein the journal bearing has a replaceable sleeve which appears to be press fit onto the shaft.

Merrill fails to disclose the replaceable wear sleeve being keyed to the shaft, and fails to disclose the key being spring-loaded.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided a keyed connection to the drive shaft, in order to have ensured that the replaceable wear sleeve would have rotated along with the shaft so that the frictional surface would have always been the interface between

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inner and outer sleeves, and the shaft itself would not have experienced a frictional load. Furthermore, it would have been considered obvious to have provided spring-loaded keys so that there would have been greater force engaging the wear sleeve with the shaft.

With regard to claim 44, Merrill discloses a plurality of journal bearings each have replaceable wear sleeves.

With regard to claim 45, the motive unit comprises a motor section (14) and a protector section (10) assembled as a single unit.

11. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill et al. in view of Shilman (RU 2162272 C1).

Merrill discloses an electric submersible motor (14), but fails to disclose the motor comprising a spring biased terminal block.

Shilman discloses an electrical connection having a spring biased terminal block (16). The terminal block is biased towards a sealed position, so that fluid communication is allowed when the plug is inserted, and not allowed when the plug is not inserted (see page 4 of the translation, paragraph 3).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided the motor of Merrill with the connection module of Shilman, as Shilman's module would have "ensure[d] equalization of pressure in the cavity with that of the liquid within the well. As a result, the cable entry [would not have been] exposed to differential pressure – a factor that [would have ensured] its reliable sealing and long-term serviceability."

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12. Claims 24 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill et al. in view of Howell et al. (US 6,602,059).

Merrill fails to disclose placing a sensor within the motor section.

Howell discloses a submersible motor and protector assembly having a sensor (30) within the motor (18).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have included a sensor within the motor of Merrill, as Howell teaches that "one skilled in the art [would have understood] that it can be advantageous to attach an optional sensor to the motor" (column 2, lines 33-36) in order to have enabled an operator at the surface to monitor downhole conditions.

13. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Merrill et al. in view of Jones (US 6,889,420).

Merrill discloses a motive unit (10, 14) for driving a submersible pump, the motive unit having a journal bearing (inner and outer sleeves proximate reference numeral 86) disposed about a drive shaft (26), wherein the journal bearing has a replaceable sleeve (inner sleeve proximate reference numeral 86) wherein the replaceable sleeve is press fit onto the drive shaft.

Merrill fails to disclose a tolerance ring.

Jones discloses a bearing (33) for use in an electric motor comprising a tolerance ring (26).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have provided a tolerance ring within the press fit

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connection between the replaceable sleeve and the shaft, in order to have allowed for a small degree of movement within the journal bearing and thereby making "the seating of the bearing less critical" (Jones, column 3, lines 12-15) and improving reliability of motive unit.

***Allowable Subject Matter***

14. Claims 47-51 are allowed.

***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert E. Fuller whose telephone number is 571-272-0419. The examiner can normally be reached on Monday thru Friday from 8:00 AM - 5:30 PM. The examiner is normally out of the office every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David J. Bagnell can be reached on 571-272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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07/16/2007  
REF

  
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